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ABSTRACT

Two college freshman required texts were chosen for analysis of readability and of cloze performance on selected passages. One cloze passage was administered to each of 218 students enrolled in General Psychology and Principles of Biology courses. Dale-Chall readability levels were separately calculated for the same passages. Reading levels of the selected textbooks ranged from fifth/sixth grade to college graduate level. Results of the cloze tests indicated that the majority of the passages selected could be read by students at the instructional level, although only 22% for one text and 42% for the other could be read at the independent reading level, which is usually required. (AA)

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A Comparison of Results Obtained Using the Cloze Procedure With Readability Levels Using the Dale-Chall Formula on Selected University Textbooks

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Running head: A Comparison of Dale-Chall and Cloze Tests

A Comparison of Results Obtained Using the Cloze Procedure With Readability Levels Using the Dale-Chall Formula on Selected University Textbooks

Selecting the right textbook is a difficult task and educators are frequently disappointed when their choice does not measure up to their expectations. The difficulty of textbooks is a concern to all teachers regardless of grade or subject matter. If textbooks and supplementary reading materials are on a level above the reading skills of the students, anxiety, frustration, and failure result. Therefore, considerable attention has been given to factors that cause and methods of determining the difficulty of textbooks.

There is a widespread agreement that low reading ability is a major problem in colleges and universities and findings of readability studies by Cline (1973) suggest that large numbers of students in higher education read below the level of their textbooks. The relationship between the difficulty of material and the reading ability of students presents a critical problem.

Recognizing this problem, Kansas State University Reading Center personnel with the help of a university grant turned its attention to an evaluation of textbooks selected for freshman classes. In an effort to gain insight into the problem, this study attempted to answer the following questions: (1) How difficult are the two selected university textbooks and (2) Are students able to read these textbooks at the "instructional level?"

Method

Selection of Materials

Four university textbooks were chosen because of difficulty expressed

by freshmen and their instructors. This paper will limit the discussion to two of the selected university textbooks, Understanding Human Behavior, General Psychology, and Biology Today, Principles of Biology. The passages were taken from those required textbooks for the selected courses. Passages of approximately 300 words were chosen at 45 page intervals. Fifteen passages were selected from Biology Today and 19 passages from Understanding Human Behavior.

Subjects

Two hundred eighteen college students, predominantly freshmen, enrolled in General Psychology and Principles of Biology were tested. Each student was asked to read one cloze passage.

Readability Measures Employed

The Dale-Chall readability formula (Dale and Chall, 1948a, 1948b) was the measure chosen to determine readability.

The cloze procedure was chosen to measure students' reading level because of its high validity and relability (Bormuth, 1966). Since the selected textbooks in this study were university textbooks, the "cut off" points recommended by Bormuth (1975, personal communication) were: "preferred criterion" (independent level), over 45 percent; "guided reading" (instructional level), 35-45 percent; (frustration level), below 35 percent. A review of the literature reveals that few studies have been designed to determine if the cloze precentage scores which Bormuth (1967, 1968) has identified as "instructional level" for intermediate grade pupils is applicable for students in higher education.

Dale-Chall readability scores were computed for all the selected passages.

A cloze passage was then constructed for each selection. The initial sentence was left intact with the remainder of the passage mutilated with an every 5th word deletion pattern.

The cloze passages were randomly assigned to the subjects. All cloze tests were administered by the researcher or her graduate assistant during regular meeting times of the classes.

The cloze passages were scored, accepting only exact word replacements as correct. The raw scores were then converted to percentage of correct responses. The number of students reading the passages at the frustration, instructional and independent reading levels was tallied.

The mean scores of the students reading the cloze passages and the Dale-Chall scores were correlated for the passages.

Results

The reading grade levels of the two selected textbooks ranged from 5-6th to college graduate level. (See tables 1 and 2)

Insert Table 1 and 2 about here

Understanding Human Behavior had passages as easy as 5-6th grade level through college with sixteen of the nineteen passages written below college reading level. Biology Today had passages at 11-12th grade level through college graduate. Approximately half of the passages in this text were written at the college graduate level.

The results of the cloze procedure tests indicate that the majority of the passages selected from the two textbooks could be read by students in their respective classes at the instructional level. (See Figure 1)

Insert Figure 1 about here

Discussion

The psychology book, Understanding Human Behavior, was written by one author and was obviously written to be readable. It would appear from this study that one could make an assumption that a textbook written by one author rather than by multiple authors helps students when reading the textbook to gain understanding. Looking at the Biology Today textbook which is written by numerous authors, one can postulate that chapters written by different authors reflect their individual writing styles and that this added complexity may create a problem for the reader, particularly if they are not flexible readers.

Obviously, there are factors that are not measured by the Dale-Chall formula which influence students' understanding of material as they read. For example, three of the four passages from Biology Today at the 11-12th grade level could not be read at the instructional level or above. In contrast, five of the six of the connected discourse passages at the college graduate level, leaving out the glossary, were read at the instructional level or above. Why is this happening? Unfortunately, this study does not answer the question. More research is needed to determine why this is occuring.

The results indicated that the majority of the passages selected from the two textbooks could be read by students in their respective classes at the instructional level. However, at this point, the question must be raised, "how much assistance is given to students at the college and university level in reading their textbooks?" The honest answer to this question is probably, "none" or "extremely little." Therefore, this author believes that it is important that students at the university and college level be able to read their selected textbooks at an independent level.

Furthermore, the reality that textbooks are frequently too difficult for the selected audience must be changed. To make reading easier and more pleasurable for everyone, reliable and valid readability formulas and tests must become an integral part of the process for selecting appropriate instructional materials for our students.

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TABLE I

A COMPARISON OF DALE-CHALL GRADE LEVELS
AND THE MEAN FOR STUDENTS READING CLOZE TESTS FOR
SELECTED PASSAGES FROM UNDERSTANDING HUMAN BEHAVIOR

Dale-Chall Grade Levels	Mean on Cloze Tests	Passages
5 - 6th Grade (5.0 - 5.9 raw score)	66.9	* Little Hans Larsen
	50.3	* Monkey See, Monkey Do
7 - 8th grade (6.0 - 6.9 raw score)	54.7	* The Eye
	35.3	Automatic Responses
9 - 10 grade (7.0 - 7.9 raw score)	34.6	* Verbal Schemes
	39.1	* Biological Theories of Play
	45.7	* The Author's Biases
	57.9	* A Way to Explore Other Planets
	45.1	* The Hunger Habit
	44.5	* Guide for the Propagandist
	33.0	* Social Inhibitions
11 - 12th grade (8.0 - 8.9 raw score)	54.2	* Environmental Determinants of Violence
	22.4	How Shall We Measure a Theory?
	37.4	* Classifying Abnormal Behavior Patterns
	37.5	Summary - I
	43.0	* Summary - II
College (9.0 - 9.9 raw score)	29.8	Stimuli and Responses
	46.9	* Eysenck's 1952 Report
	39.6	* Acupuncture

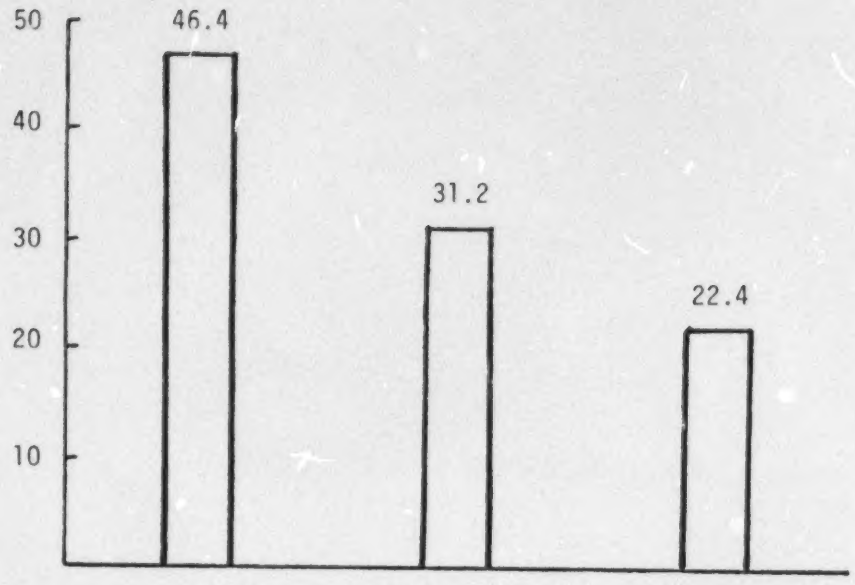
* Passage read by 50 percent or more of the students at the instructional level or above.

TABLE II

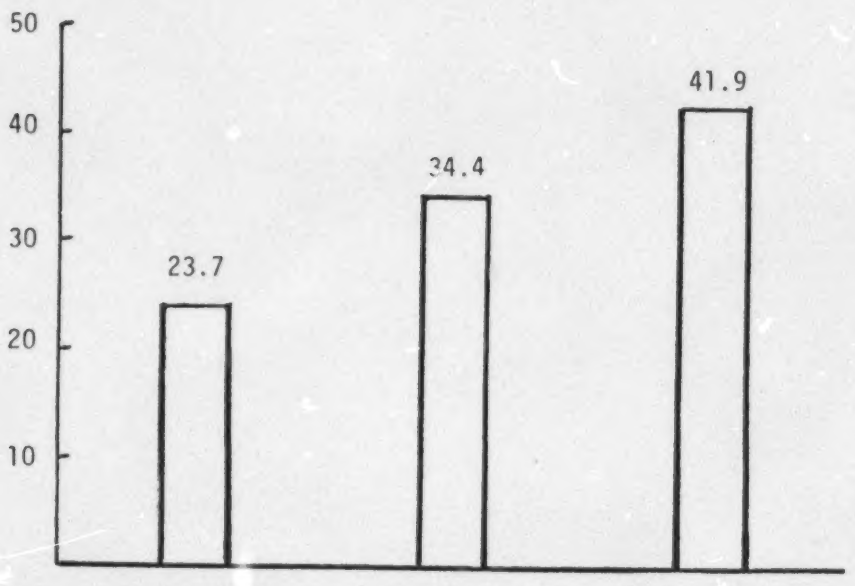
A COMPARISON OF DALE-CHALL GRADE LEVELS
AND THE MEAN FOR STUDENTS READING CLOZE TESTS FOR
SELECTED PASSAGES FROM BIOLOGY TODAY

Dale-Chall Grade Levels	Mean on Cloze Tests	Passages
11 - 12th grade (8.0 - 8.9 raw score)	31.7	Plant Growth Substances - Auxins
	41.3	* Mycoplasmas
	24.1	Predators Do Not Eat Latin Binomials
	30.9	Principles of Classification
College (9.0 - 9.9 raw score)	31.9	Organization of Motor Systems
	44.7	* Plant Surface Tissue
	31.4	The Distant Future
	36.8	* Cnidaria
College Graduate (10.0 and above raw score)	24.5	Geology, Geography, and Demography
	45.4	* Chromosal Abnormalities and Mutations
	46.9	* Cancer and Cellular Control
	41.2	* Activity of Neurons: Synaptic Transmissions
	30.6	* Mechanisms of Learning
	36.2	* Photosynthetic Unit
	22.0	Glossary

* Passage read by 50 percent or more of the students at the instructional level.



Reading Levels for Biology Today



Reading Levels of Understanding Human Behavior

Figure 1. Percentage of Students Reading Passages from Selected Textbooks at the Frustration, Instructional and Independent Reading Levels.